

Amendments to the Specification:

Please replace the heading on page 1, line 5, with the following heading:

BACKGROUND OF THE INVENTION

Please add the following new heading on page 6, line 3:

BRIEF SUMMARY OF THE INVENTION

Please add the following new heading and paragraphs on page 9, line 1:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 presents the expected and observed fragment patterns for the restriction digests of Example 1a.

Figure 2 presents the observed fragment patterns for BspEI-released internal control DNA restriction digests of Example 1c.

Figure 3 presents the observed fragment patterns for the restriction digests of Example 1b.

Figure 4 presents the expected and observed TRSPA-2 hybridization patterns for pNW33 using matrix 7 (Example 2).

Figure 5 presents the expected and observed TRSPA-2 hybridization patterns for pNW33 using matrix 17 (Example 2).

DETAILED DESCRIPTION OF THE INVENTION

Please replace the paragraph on page 109, line 9, though page 110, line 35, with the following amended paragraph:

BspEI sites define the outer ends of the 140 bp and the 200 bp fragments. The full sequence for pNW33 (**SEQ ID NO: 1**) is shown below:

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tcgcgcgtttcggatgacggtgaaaacctctgacacatgcagctcccgagacggtcacagcttgctgtaagcggatgccg
ggagcagacaagcccgtagggcgctcagcgggtgtggcggtgtcggggctggcttaactatcgggcatcagagcagat
tgtactgagagtgcaccatatgcggtgtgaaataccgcacagatgcgtaaggagaaaataccgcatcaggcgccattcgccatt
caggctgcgcaactgttgggaaggcgatcggtgcgggcctcttcgtattacgccagctggcgaaaggggatgtgctgcaa
ggcgattaagtgggtaacgccaggggtttccagtcacgacgttgtaaacgacggccagtgaattcgagctcggtaccgggc
ccccctcgaggctcagcggtatcgataagcttgatcgagctggtaaccggacgcccgcgtcgaagatgttgggggtgtgtaa
caatatcgattccaattcagcggggggccacctgatatccttgtatttaattaaagacttcaagcgggtcaactatgaagaagtgtcg
tcttcgtcccagtaaggatccgcactttgaattttgtaacctgaagggatcgtaaaaacagctcttcttcaaatctatacattaagac
gactcgaaatccacatatcaaatatccgagtgtagtaaacattccaaaaccgtgatggaatggaacaacacttaaatgtacacct
ggtaatccggttttagaatccatgataataatttctggattattgtaattttttgcacgttcaaaatttttgcaaccccttttggaac
aaacactacggtaggctgcgaaatgttcatactgttgagcaattcacgttcattataagcttttactgcatacgacgattctgtgatt
gtattcagcccatatcgttcatagcttctgccaaccgaacggacatttgaagtattccgcgtacgtgatgtcacctcgatatgtg
catctgtaaaagcaattgttcaggaaccagggcgatctcttcatagccatggaatacgcccttttcagtgttgcgatgctaagcc
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gttacaaatattccgagcaccaagaatggctgcgcgttgcttggtacttgacgtcgtatttgacggggctccttgagaaagtattta
aactggaacacaatctgaggaatgatcaaagcaaccaacgccaacgcataataactagtgaataccaagacctcccaataata
gcaccagacttgttaataacctctggctctgattgctccagatggaattggacgatatggctcattaattgcgtcgatatctcta
tcataccagtcgttgattgtctgtgtatagccagtaagacaaggaccagacatcatcatgcaaagaatcgcttaagcccttctggc
ctttatgaggatctctctgatttttctgcgtcgagtttccggtaagaccttccggtacttctgcccacaaacacaactcctccgcgcaa
cttttccggttggttacttgactggccacgtaatccacgatctcttttccgtcatcgttttccgtgctccaaaacaacaacggcgg
cgggtccggattaccagctgcgatcaagcttatcgataccgtcgacctgcacctgcaggcatgaagcttggcgtaatcatggtc
atagctgtttcctgtgtgaaattgtatccgctcacaattccacacatacagagccggaagcataaagtgtaaagcctgggggtg
cctaagtgtgagtaactcacattaattgcgttgcgctcactgcccgttccagtcgggaaacctgtcgtgccagctgcattaat
gaatcgccaacgcgcggggagagggcgtttgcgtattggcgctcttccgcttctcgtcactgactcgtcgcgtcggtcg
ttcggctgcggcgagcgggtatcagctcactcaaaggcggtaatcaggttatccacagaatcaggggataacgcaggaaagaac
atgtgagcaaaaaggccagcaaaaaggccaggaaccgtaaaaaggccggttgcgtggcgttttccataggtcggccccctga
cgagcatcacaaaaatcgacgtcaagtcagagggtggcgaaacccgacaggactataaagataccaggcggttccccctggaa
gtcctcctgctgcgtctcctgttccgacctgcccgttaccggatacctgtccgccttctcccttcgggaagcgtggcgctttctc
atagctcacgctgtaggtatctcagttcgggtgtaggtcgttgcgtccaagctgggctgtgtgcacgaacccccgttcagcccga
ccgctgcgccttatccgtaactatcgtcttgagccaacccggtgaagacacgacttatgccactggcagcagccactggtaac
aggattagcagagcgaggtatgtagcggtgctacagagttctgaagtggcctaactacggctacactagaaggacagta
tttggtatctgcgtctgctgaagccagttaccttcggaaaaagagttgtagctcttgatccggcaacaaaccaccgctgtag
cgggtggtttttgttgcaagcagcagattacgcgcagaaaaaaaggatctcaagaagatccttgatctttctacggggtctgac
gtcagtggaacgaaaactcacgttaagggttttggtcatgagattacaaaaaggatcttcacctagatcctttaaattaaat
gaagtttaaatcaatctaaagtatatatgagtaaacttggctgacagttaccaatgcttaatcagtgaggcacctatctcagcgatc
tgtctatttcgttcatccatagttgcctgactccccgtcgtgtagataactacgatacgggagggcttaccatctggccccagtgtg
caatgataccgcgagaccacgctcaccggctccagatttatcagaataaaccagccagccggaaggggccgagcgcagaa
gtggtcctgcaactttatccgctccatccagctattaattgttgccgggaagctagagtaagtagttgccagttaatagtttgcg
caacgttggtgccattgctacaggcatcgtggtgtcacgctcgtcgtttggtatggcttcattcagctccggttccaacgatcaag
gcgagttacatgatccccatgttggtgcaaaaaagcgggttagctccttcggctcctccgatcgttgtcagaagtaagttggccgcag
tgttatcactcatggttatggcagcactgcataattcttactgtcatgccatccgtaagatgctttctgtgactggtagtactcaa

ccaagtcattctgagaatagtgtatgcggcgaccgagttgctcttcccggcgtaatacgggataataccgcgccacatagca
gaactttaaagtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgatgt
aaccctctgtgcaccaactgatcttcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatgcc
gcaaaaaagggaataagggcgacacggaaatgtgaatactcatactcttcttttcaatattattgaagcatttatcagggttattg
tctcatgagcggatacatatttgaatgtatttagaaaaataaacaataagggttccgcgcacattccccgaaaagtgccacctga
cgtctaagaaaccattattatcatgacattaacctataaaaataggcgtatcacgaggccctttcgtc **(SEQ ID NO: 1)**

Please replace the paragraph on page 115, lines 7-13, with the following amended paragraph:

Primers and PCR

20 μ M BIO140UP

5' biotin-CGCAGCTGGTAATCCGGACGCCCGCGTCGAAGATGTT 3'

(SEQ ID NO: 2)

20 μ M BIO200DOWN

5' biotin-CGCAGCTGGTAATCCGGACCCGCCGCGTTGTTGTT 3'

(SEQ ID NO: 3)

Please replace the paragraph on page 119, lines 9-16, with the following amended paragraph:

After digestion, 20 μ l of digests 1-7 were mixed with 10 μ l of 50 % glycerol AGE loading dye and 4 μ l of digests 1-7ic were mixed with 2 μ l of 50 % glycerol AGE loading

dye. Digests in loading dye were then electrophoresed on a 2.5 % MetaPhor™ agarose gel in 1x TBE. The gel was stained for 60 min in 500 ml of 1x TBE containing 50 µl of Vistra Green. The stained gel was finally imaged on a Fluorimager with the following settings: a 488 nm laser; a 570 DF 30 filter; a PMT setting of 700 V; 200 µm resolution; and low sensitivity.

Please replace the paragraph on page 121, line 6, though page 122, line 22, with the following amended paragraph:

HindIII and EcoRI sites define the outer ends of the 25 bp and the 40 bp fragments. The sequence of pNW35 (SEQ ID NO: 4) is shown below with the inserted region shown in bold type:

atgacatgattacgccaagctctaatacgactcactatagggaaagcttccggacgtctcaggctaattgttgccaccgac
gttccacgatggggcgctcttaagggttagaccctcgtcgggagtatttctgtgatctggcgacactcacgcgagaagtc
attaccggcgatatgaattcactggccgctcgtttacaacgctgctgactgggaaaaccctggcggtacccaacttaatcgcttg
cagcacatcccccttcgccagctggcgtaatagcgaagaggcccgaccgatcgccctcccaacagttgcgagcctgaat
ggcgaatgggaaattgtaaacgttaattttgttaaaatcgcggttaaattttgttaaatcagctcatttttaaccaataggccgaaa
tcggcaaaatccctataaatcaaaagaatagaccgagatagggttgagtgtgtccagtttgaacaagagtcactattaaag
aacgtggactccaacgtcaaagggcgaaaaaccgtctatcaggcgcatggccactacgtgaaccatcacctaataagttttt
tggggtcgaggtgccgtaaaagcactaaatcggaaccctaaaggagcccccgatttagagcttgacggggaaagccggcgaa
cgtggcgagaaaggaagggaagaaagcgaaaggagcggcgctagggcgctggcaagtgtagcggtcacgctgcgcgta
accaccacaccgccgcgcttaatgcgccgtacaggcgcgctcaggtggcacttttcggggaaatgtgcgcggaaccctat
ttgtttatttttctaaataattcaaatatgtatccgctcatgagacaataaccctgataaatgcttcaataatattgaaaaaggaagagt
atgagtattcaacatttcggtgcgccctattccctttttgcggcattttgccttcctgttttgctcaccagaaacgctggtgaaagt
aaaagatgctgaagatcagttgggtgcacgagtggttacatcgaaactggatctcaacagcggtgaagatccttgagagttttcgc
cccgaagaacgtttccaatgatgagcacttttaaagttctgctatgtggcgcggtattatcccgtattgacgccgggcaagagca

actcggtcgccgcatacactattctcagaatgacttggtgagtactaccagtcacagaaaagcatcttacggatggcatgacag
taagagaattatgcagtgctgccataacatgagtataactgcggccaacttactctgacaacgatcggaggaccgaagg
agctaaccgctttttgcacaacatgggggatcatgtaactgccttgatcgttgggaaccggagctgaatgaagccatacaaaa
cgacgagcgtgacaccacgatgcctgtagcaatggcaacaacgttgcgcaaaactattaactggcgaactacttactctagcttcc
cggcaacaattaatagactggatggaggcggataaagttgcaggaccacttctgcgctcggccctccggctggctggtttattg
ctgataaatctggagccggtgagcgtgggtctcgcggtatcattgcagcactggggccagatggtgaagccctcccgatcgtagt
tatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgtgagataggtgcctcactgattaagcattg
gtaactgtcagaccaagtttactcatatatacttttagattgatttaaaacttcatttttaatttaaaaggatctaggtgaagatccttttga
taatctcatgacaaaaatcccttaacgtgagtttctggtccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgat
ccttttttctgcgcgtaatctgctgcttgcacacaaaaaaaccaccgctaccagcgggtgtttgttgcggatcaagagctacca
actcttttccgaaggtaactggcttcagcagagcgcagatacacaatactgtccttctagttagccgtagtaggcccaccacttc
aagaactctgtagcaccgcctacatacctcgtctgtaacgttaccagtggtgctgctgccagtggcgataagtcgtgtcttacc
gggttgactcaagacgatagttaccggataaggcgcagcggctcgggctgaacgggggggtcgtgcacacagcccagcttgg
agcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcgccacgctcccgaaggagaaaggcgg
acaggatatccggtgaagcggcagggctggaacaggagagcgcacgaggagcttccagggggaacgcctggtatctttatag
tcctgtcgggtttgccacctctgacttgagcgtcgattttgtgatgctcgtcaggggggaggagcctatggaaaaacgccagc
aacgcggccttttacggttcttgccctttgtggtcctttgtcacatgttcttctcgttatccctgattctgttgataaccgtat
taccgctttgagtgagctgataccgctcgcgcagccgaacgaccgagcgcagcagtcagtgagcgaggaagcgggaaga
gcgccaatacgaacccgctctccccgcgcgttgccgattcattaatgcagctggcacgacaggtttcccgactggaaagc
gggcagtgagcgcacgaacgaattaatgtgagttagctcactcattaggcaccacaggctttacactttatgcttccggctcgtatgt
gtgtggaattgtgagcggataacaattcacacaggaaacagct **(SEQ ID NO: 4)**

Please replace the paragraph on page 123, lines 3-7, with the following amended paragraph:

Primers and PCR

U-19 mer bio primer 5' bio-GTTTTCCCAGTCACGACGT 3'

(SEQ ID NO: 5)

ICPCR(F) primer 5' TCCGGACGTCTCAGGCTAATGTT 3'

(SEQ ID NO: 6)

Please replace the paragraph on page 129, line 12, through page 130, line 13, with the following amended paragraph:

Oligonucleotides

*Bam*HI short PCR primer 5' TGTAACGACACATTGCTGGATACC 3'

(SEQ ID NO: 7)

*Hind*III short PCR primer 5' ATATAACTCTCGCTCCTTGATAAC 3'

(SEQ ID NO: 8)

*Nco*I short PCR primer 5' AGGCGTCTGAGGCTGCGGCTATGG 3'

(SEQ ID NO: 9)

*Spe*I short PCR primer 5' AACCCGTCGCGACGAGAGTCTAAG 3'

(SEQ ID NO: 10)

*Afl*III short PCR primer 5' GATATACGTGATATATTTTGATTG 3'

(SEQ ID NO: 11)

*Bam*HI adaptor 5' pGATCGGTATCCAGCAATGTGTCGTTACA 3'
(SEQ ID NO: 12)

*Hind*III adaptor 5' pAGCTGTTATCAAGGAGCGAGAGTTATAT 3'
(SEQ ID NO: 13)

*Nco*I adaptor 5' pCATGCCATAGCCGCAGCCTCAGACGCCT 3'
(SEQ ID NO: 14)

*Spe*I adaptor 5' pCTAGCTTAGACTCTCGTCGCGACGGGTT 3'
(SEQ ID NO: 15)

*Afl*III adaptor 5' pTTAACAATCAAAATATATCACGTATATC 3'
(SEQ ID NO: 16)

*Bam*HI long PCR primer 5' TGTAACGACACATTGCTGGATACCGATCC 3'
(SEQ ID NO: 17)

*Hind*III long PCR primer 5' ATATAACTCTCGCTCCTTGATAACAGCTT 3'
(SEQ ID NO: 18)

*Nco*I long PCR primer 5' AGGCGTCTGAGGCTGCGGCTATGGCATGG 3'
(SEQ ID NO: 19)

*Spe*I long PCR primer 5' AACCCGTCGCGACGAGAGTCTAAGCTAGT 3'
(SEQ ID NO: 20)

*Afl*III long PCR primer 5' GATATACGTGATATATTTTGATTGTTAAG 3'
(SEQ ID NO: 21)

Luc140down primer
5' GCGCTAGGGATCCTTACTGGGACGAAGACGAA 3'
(SEQ ID NO: 22)

Luc140up-bio primer

5' biotin-CGCAGCTGGTAATCCGGACGCCCCGCGTCGAAGATGTT3'

(SEQ ID NO: 23)

Please replace the paragraph on page 138, lines 6-32, with the following amended paragraph:

Clone #1

Mutant sequence (#1M)

5'CCCGGGGGATCCTCGTTTTATTGGGCCGAGTTTTGGTCCGTAGTGCTTGGTT
AGATATGCTTAT
3'GGGCCCCCTAGGAGCAAAATAACCCGGCTCAAACCAGGCATCACGAACC
AATCTATACGAATA

G TTCACAAAATCATCCTTGTACAGAATTC3' **(SEQ ID NO: 24)**
CAAGTGTTTTAGTAGGAACATGTCTTAAG5'

Control sequence (#1C)

5'CCCGGGGGATCCTCGTTTTATTGGGCCGAGTTTTGGTCCGTAGTGCATGGTT
AGATATGCTTAT
3'GGGCCCCCTAGGAGCAAAATAACCCGGCTCAAACCAGGCATCACGTACCA
ATCTATACGAATA

G TTCACAAAATCATCCTTGTACAGAATTC3' **(SEQ ID NO: 25)**

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CAAGTGTTTTAGTAGGAACATGTCTTAAG5'

Clone #7

Control sequence (#7C)

5'CCCGGGTGTACACAAAAGTTTACCTGAAGAACGTGGGGGGTCGTGCCTGGT
CTTGCGTCACCTG
3'GGGCCCACATGTGTTTTCAAATGGACTTCTTGCACCCCCCAGCACGGACCA
GAACGCAGTGGAC

GTCTCAGGAGAGGGTCCCCATGGGAATTC3' **(SEQ ID NO: 26)**
CAGAGTCCTCTCCAGGGGTACCCTTAAG5'

Please replace the paragraph on page 139, lines 6-8, with the following amended paragraph:

Oligonucleotides

BIOUPST2 5' bio-CTACTGATCGGATCCCCG 3' **(SEQ ID NO: 27)**

BIODOWN3 5' bio-AAACGACGGCCAGTGAAT 3' **(SEQ ID NO: 28)**

Please replace the paragraph on page 141, lines 4-7, with the following amended paragraph:

Oligonucleotides

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BIOUPST2 5' bio-CTACTGATCGGATCCCCG 3' (SEQ ID NO: 29)
DOWN3 5' bio-AAACGACGGCCAGTGAAT 3' (SEQ ID NO: 30)

Please replace the paragraph on page 145, lines 4-8, with the following amended paragraph:

Oligonucleotides

#1 probe oligo 5' GGCCGAGTTTTGGTCCGTAG 3' (SEQ ID NO: 31)

#7 probe oligo 5' GTCTTGCGTCACCTGGTCTCAG 3' (SEQ ID NO: 32)

At the end of the written description, before the claims, please delete the previously submitted "Sequence Listing" and insert the revised "Sequence Listing" attached hereto.